



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VII
901 NORTH 5th STREET
KANSAS CITY, KANSAS 66101

August 20, 2009

MEMORANDUM

SUBJECT: Deposition Modeling – 2008 SIP Emissions

FROM: Richard L. Daye
Regional Meteorologist
AWMD/APDB/APS

TO: Gene Gunn
Chief, SPEB

I have completed the deposition modeling for the residential areas west and north of the Doe Run Herculaneum facility. As expected, the highest deposition in this area occurs along Main Street adjacent to the facility from about Station Street to Curved Street. Much of this area is now owned and “fenced” by Doe Run. The highest predicted deposition in the ambient air is about 10 grams per square meter. The predicted deposition is what would occur with meteorological conditions similar to those that occurred from April 1, 1997 to March 31, 1999 and the lead emissions that were modeled for the 2008 State Implementation Plan (SIP).

The analysis is similar to what was done when emission rates in the 2001 SIP were used. The modeled grid area extends from the Joachim Creek on the south to Highway 61/67 on the west and along Main Street on the north and east. The UTM grid is based on NAD27 datum. Fifty meter grid spacing was used in the modeling. Terrain elevations and land cover were obtained from USGS NED data and processed by the AERMAP and AERSURFACE preprocessor programs to the AERMOD air dispersion model. The AERMET preprocessor program was used to calculate the meteorological parameters from the River Site data at the facility and the upper air data from Lincoln, IL. The source data were those used in the modeling for the 2008 lead SIP and represent the highest lead emissions from the Doe Run facility. The TOXICS and dry deposition options in AERMOD were used. The lead emissions included those due to truck traffic from Interstate 55 to the facility via Highway 61/67 and Main Street. Emissions due to the “new” truck route were not modeled. There is a still uncertainty in some of the source data.

The figures are derived from the same data set. Figures 1 and 2 are direct outputs from the AERMOD program that I used. (The contours outside the colored area in Figure 2 are elevation contours. The red areas are road or area sources). Figure 3 is output from the Surfer graphical program but the contour intervals are different. Please call me if you need additional analyses or information.



30268099

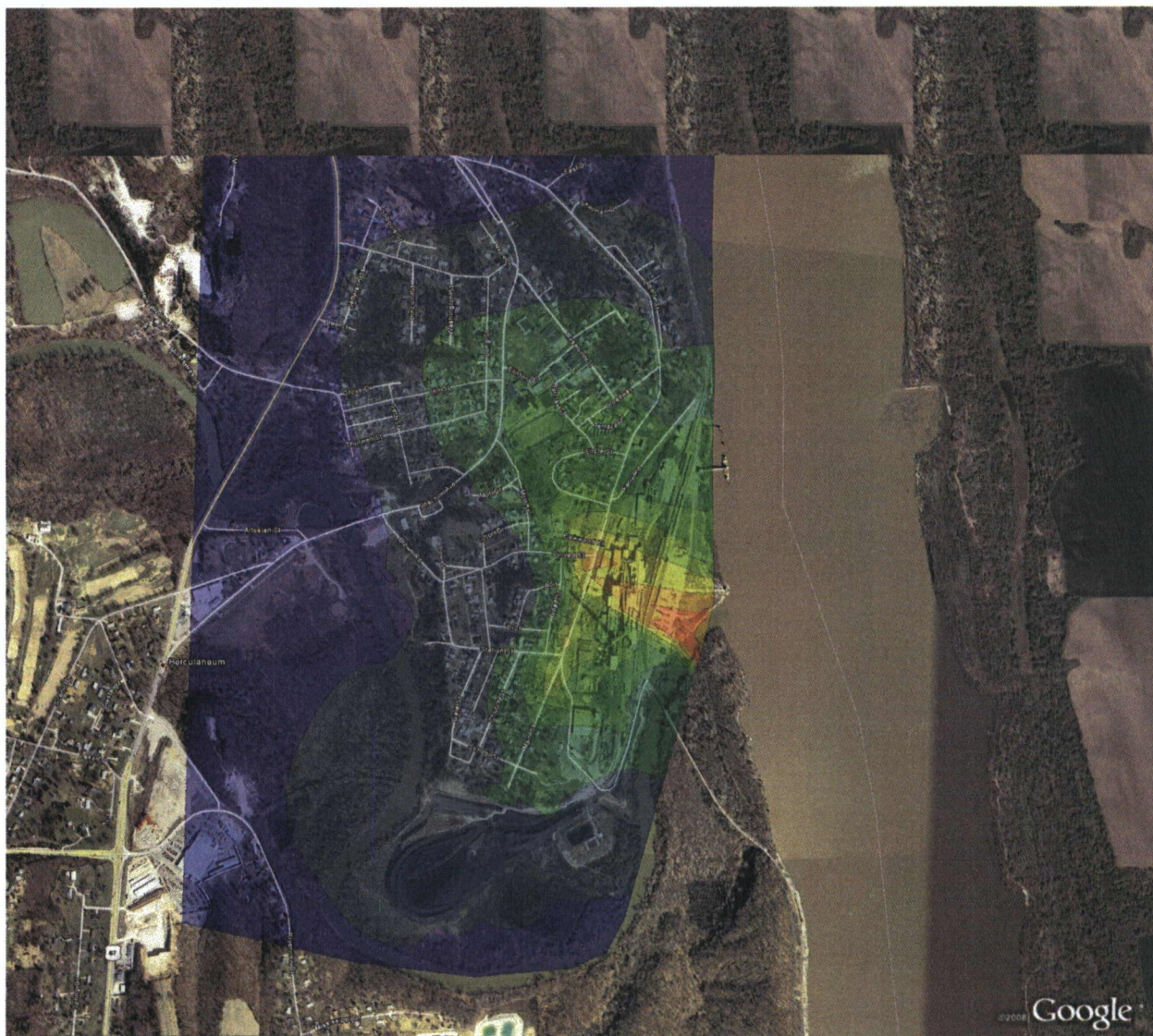


FIGURE 1: PREDICTED LEAD DEPOSITION HERCULANLEUM, MISSOURI AREA

